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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/519,000	Applicant(s) CHRISTENSEN ET AL.	
	Examiner Michael C. Colucci	Art Unit 2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on ______.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-22 is/are pending in the application.

4a) Of the above claim(s) ______ is/are withdrawn from consideration.

5)☐ Claim(s) ______ is/are allowed.

6)☒ Claim(s) 1-22 is/are rejected.

7)☐ Claim(s) ______ is/are objected to.

8)☐ Claim(s) ______ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 December 1977* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. ______.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/21/2004*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. ______ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: ______.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 12/04/2007 have been fully considered but they are not persuasive.

In response to arguments (pages 11-13):

Argument 1 (page 11 paragraph 4 – page 12 paragraph 1):

- "Contrary to the Examiner's assertion, Lew does not disclose or suggest "constructing a transition window from an estimated bit time ..... having a preamble sub-window, and at least one data sub-window...". In rejecting this aspect of the claimed principles, the Examiner cites Lew at Col. 1, lines 38-51, and Col 1, lines 51-62. These cited portions of Lew describe the structure of the AES signal format standard used for digitally encoding audio signals and transmitting the same. The present principles also works with such signals, and it is believed therein lies the confusion.

Argument 2 (page 12 paragraph 4 – page 13 paragraph 1):

- "In addition, the concept of using the "transition locations" in the serialized stream to extract data therefrom relative to the constructed transition window having a pre-amble sub window is also neither disclosed, nor suggested by the teachings of Lew. Figure 2 of Lew illustrates and AES/EBU form for digital audio streams. As discussed above, the present principles are operating on AES streams, so the disclosure of the format of such stream by Lew does not in any way anticipate the "transition

locations" as claimed by applicant. In fact, Lew teaches away from the present principles by reciting that the PLLs utilize the bit transitions to establish the clock signals it will use for synchronization. (See Col 5, lines 12-15). The remaining disclosure of Lew does not make any further mention of the bit transitions in the AES stream and/or the use of the same in extracting data from the serialized stream of digital audio that is already in the AES format. This is because Lew does not extract anything from the AES stream."

Response to both arguments 1 and 2:

Lew teaches a data stream with a well known AES/EBU format as illustrated in Fig. 2. Having compared figure 2 of Lew with the current application figures 6 and 7, Examiner takes the position that a window and a frame have the same function and are equally effective. Particularly, figure 2 of Lew shows start and stop bits within frames and sub frames of an AES format of a frame for an audio signal. The digital audio serial data is also bi-phase modulated for synchronization and clock extraction purposes. Within the frame of a digital stream, there exists various bits such as validity, user, and parity. The location of these bits renders how data can be extracted from a signal and provides synchronization. Lew describes bit fields in AES format where preamble fields 34 and 36 provide synchronization and the identification of preambles for digital audio fields. This indicates the start of a block of frames, where user information is conveyed. The location of a sub frame plays an important role in establishing

synchronization and where to extract information when transitioning from one sub frame/frame to another (col 4 lines 34-68). Additionally, Examiner takes the position that a transition location is a location where the status of bits changes within a frame. Lew teaches sub frame synchronization of preambles and bit transitions. (col 6 lines 16-32). Examiner also takes the position that the extraction of information is taught by Lew, where not only clock information but additional information such as user information and other parameters relative to detection and transmission.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 11-14, and 20-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Lew, US 5245667 A (hereinafter Lew).

Re claims 1,and 11, Lew teaches a method of extracting digital audio data words from a serialized stream of digital audio data (col 4 lines 34-68 & Fig. 2), comprising:

constructing a transition window from an estimated bit time for said serialized stream of digital audio data, said transition window having a preamble sub-window (col 6 lines 16-32) and at least one data sub-window (col 4 lines 34-68 & Fig. 2);

extracting plural digital audio data words from said serialized stream of digital audio (col. 1 line 22-28) based upon the location of each transition in said serialized stream of digital audio data relative to said preamble sub-window (col 6 lines 16-32) and said at least one data sub-window of said transition window (col 4 lines 34-68 & Fig. 2);

each one of said extracted plural digital audio data words having a preamble (col 6 lines 16-32) identifiable by a combination of at least one transition located in said preamble sub-window of said transition window and at least one transition located in said at least one data sub-window of said transition window (col 4 lines 34-68 & Fig. 2).

Re claims 12 and 13, Lew teaches the method of claim 11, wherein said fast sample rate is at least about twenty times faster than a data rate for said serialized stream of digital audio data (Lew col 5 line 44-53).

Re claims 14 and 21, Lew teaches the method of claim 13, wherein each one of said extracted plural digital audio data words has a preamble (col 6 lines 16-32) identifiable by a combination of at least one transition located in said preamble sub-window (col 6 lines 16-32) of said transition window-and at least one transition located in said at least one data sub-window of said transition window (col 4 lines 34-68 & Fig. 2).

Re claim 20, Lew teaches a 20. (Previously presented) A bi-phase decoder for use in decoding a stream of AES-3 digital aud[o data, comprising:

a decoder circuit coupled to receive a stream of AES-3 digital audio data, an estimated bit time for said stream of AE$-3 digital audio data (col 4 lines 34-68 & Fig. 2) and a fast clock, said fast clock having a frequency of about at least twenty times faster than a frequency of said stream of AES-3 digital audio data (Lew col 5 line 44-53);

a data store (col 8 line 24-42) coupled to said decoder circuit, said data store receiving sub frames of digital audio data extracted, from said stream of AES-3 digital (col 4 lines 34-68 & Fig. 2) audio data by said decoder circuit (Fig. 1 & col 3 line 55-65);

said decoder circuit extracting sub frames of said digital audio data by constructing a transition window from said estimated bit time (col 4 lines 34-68 & Fig. 2), sampling said stream of AES-3 digital audio data using said fast clock (Lew col 5 line 44-53) and applying said sampled stream of AES-3 digital audio data to said transition window to identify transitions (col 6 lines 16-32), in said sampled stream of AES-3 digital audio data, indicative of preambles of said sub frames of digital audio data (col 4 lines 34-68 & Fig. 2).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in **Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966)**, that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows: **(See MPEP Ch. 2141)**

a. Determining the scope and contents of the prior art;
b. Ascertaining the differences between the prior art and the claims in issue;
c. Resolving the level of ordinary skill in the pertinent art; and
d. Evaluating evidence of secondary considerations for indicating obviousness or nonobviousness.

5. Claims 2-4, 8, 15-18, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lew US 5245667 A (hereinafter Lew) in view of Gillick et al US 4837831 A (hereinafter Gillick).

Re claims 2 and 15, Lew teaches a pair of successive transitions (col 8 lines 24-42) located in said preamble sub-window followed by a pair of successive transitions located in said at least one data sub-window (col 4 lines 34-68 & Fig. 2).

However, Lew fails to teach the method of claim 1, and further comprising identifying said extracted data words (Gillick col 8 lines 5-15) as having a first type of preamble if said extracted data words have a pair of successive transitions (Gillick col 8 lines 16-37).

Gillick teaches that the acquisition of multiple utterances of each vocabulary word, method 100 advances to step 106. This step performs a plurality of substeps 108, 110, and 112 for each word in the vocabulary. The first of these substeps, step 108, itself comprises two substeps, 114 and 116, which are performed for each utterance of each word. Step 114 finds an anchor for each utterance, that is, the first location in the utterance at which it has attained a certain average threshold amplitude. Step 116 calculates five smoothed frames for each utterance, positioned relative to its anchor. Additionally, Gillick teaches in reference to figures 4 and 5, where FIG. 4

schematically represents how such smoothed frames are calculated. A smoothed frame 118 is calculated from five individual frames 104A-104E, of the type described above with regard to FIG. 3. According to this process, each pair of successive individual frames 104 are averaged, to form one second level frame 120. Thus the individual frames 104A and 104B are averaged to form the second level frame 120A, and the individual frames 104B and 104C are averaged to form the second level frame 120B, and so on, as is shown in FIG. 4.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention extracted pairs of successive sub windows containing words. Identifying and extracting successive frames with words in them would allow for the detection and location of multiple utterances within an audio signal. The repetition of an utterance is not limited to adjacent words and can have a separation between the repeated words, where transitions from a repeated word to the next can be smoothed and the location of occurrence can be stored in memory as to detect a repeating segment of multiple words (i.e. chorus).

Re claims 3 and 16, Lew teaches preamble sub-window-separated by a pair of successive transitions located in said at least one data sub-window.

However, Lew fails to teach the method of claim 2, and further comprising identifying said extracted data words as having a second type of preamble if said extracted data words (Gillick col 8 lines 5-15) have a pair of non-successive transitions (Gillick col 8 lines 16-37).

Gillick teaches that the acquisition of multiple utterances of each vocabulary word, method 100 advances to step 106. This step performs a plurality of substeps 108, 110, and 112 for each word in the vocabulary. The first of these substeps, step 108, itself comprises two substeps, 114 and 116, which are performed for each utterance of each word. Step 114 finds an anchor for each utterance, that is, the first location in the utterance at which it has attained a certain average threshold amplitude. Step 116 calculates five smoothed frames for each utterance, positioned relative to its anchor. Additionally, Gillick teaches in reference to figures 4 and 5, where FIG. 4 schematically represents how such smoothed frames are calculated. A smoothed frame 118 is calculated from five individual frames 104A-104E, of the type described above with regard to FIG. 3. According to this process, each pair of successive individual frames 104 are averaged, to form one second level frame 120. Thus the individual frames 104A and 104B are averaged to form the second level frame 120A, and the individual frames 104B and 104C are averaged to form the second level frame 120B, and so on, as is shown in FIG. 4.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention extracted pairs of successive sub windows containing words. Identifying and extracting successive frames with words in them would allow for the detection and location of multiple utterances within an audio signal. The repetition of an utterance is not limited to adjacent words and can have a separation between the repeated words, where transitions from a repeated word to the next can be smoothed

and the location of occurrence can be stored in memory as to detect a repeating segment of multiple words (i.e. chorus).

Re claims 4 and 17, Lew teaches the method of claim 3, and further comprising identifying said extracted data words as having a third type of preamble (col 6 lines 16-32) if said extracted data words have a transition located in said preamble sub-window followed by first, second and third transitions located in said at least one data sub-window (col 4 lines 34-68 & Fig. 2).

Re claims 8 and 18, Lew teaches the method of claim 1, wherein said estimated bit time is derived from said serialized stream of digital audio data (col 4 lines 34-68 & Fig. 2).

Re claim 22, Lew teaches the apparatus of claim 21, and further comprising a bit time estimator circuit having an input coupled to receive said stream of AES-3 digital (col 4 lines 34-68 & Fig. 2) audio data and an output coupled to said decoder circuit (col 4 lines 34-68 & Fig. 3), said bit time estimator determining said estimated bit time for output to said decoder circuit (col 4 lines 34-68 & Fig. 3).

6. **Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lew US 5245667 A (hereinafter Lew) in view of Gillick et al US 4837831 A**

(hereinafter Gillick) and further in view of Akagiri US 5490130 (hereinafter Akagiri).

Re claims 5-7, Lew teaches the method of claim 4, wherein said transition window is construed such that said at least one data sub-window includes a first data sub-window (col 4 lines 34-68 & Fig. 2).

However, Lew in view of Gillick fails to teach a sub-window which extends from about ¼ times said estimated bit time to about ¾ times said estimated bit time and a second data sub window which extends from about ¾ times said estimated bit time to about 1¼ times said estimated bit time (Akagiri col 15 lines 7-20).

NOTE: The use of *about* is construed to be an estimate with no fixed range or deviation limitation, where 1.5 or even 2 can be considered close to .5 without a specific variation constraint and is therefore construed to functionally equivalent to a scaling of .25 or .5.

Akagiri teaches that frequency range signals is then divided in time into blocks to which block floating processing and orthogonal transform processing is applied. The block length decision circuit 45 adaptively determines the block length of the blocks in each of the frequency ranges according to dynamic characteristics of the digital input signal. The digital input signal is notionally divided in time into frames. Then, after the digital input signal is divided into plural frequency range signals, each frequency range signal is divided into the blocks in which the frequency range signal will be orthogonally transformed. Each block corresponds to a frame or an integral fraction (e.g., 1/2, 1/4) of

a frame. Thus, the maximum block length in which each frequency range signal is orthogonally transformed is equal to the frame length.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention using a window or frame that is scaled by about .25 to 1.25. Using a scaled value for a block length of a frame allows for orthogonal constraints to be met during the transformation of a signal from the time to frequency range as to not overlap data between adjacent frames by extending/shortening a frame.

7. Claims 9-10 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lew US 5245667 A (hereinafter Lew) in view of Gillick et al US 4837831 A (herein after Gillick) and further in view of Tackin US 7180892 (hereinafter Tackin).

Re claims 9-10 and 19, Lew teaches the method of claim 18, and further comprising:

identifying transitions in said serialized stream of digital audio data which occur within said constructed bit window (col 4 lines 34-68 & Fig. 2),

However, Lew fails to teach the time separating a set of successive identified transitions being a measurement of said estimated bit time (Gillick col 8 lines 5-37).

Gillick teaches that the acquisition of multiple utterances of each vocabulary word, method 100 advances to step 106. This step performs a plurality of substeps 108, 110, and 112 for each word in the vocabulary. The first of these substeps, step

108, itself comprises two substeps, 114 and 116, which are performed for each utterance of each word. Step 114 finds an anchor for each utterance, that is, the first location in the utterance at which it has attained a certain average threshold amplitude. Step 116 calculates five smoothed frames for each utterance, positioned relative to its anchor. Additionally, Gillick teaches in reference to figures 4 and 5, where FIG. 4 schematically represents how such smoothed frames are calculated. A smoothed frame 118 is calculated from five individual frames 104A-104E, of the type described above with regard to FIG. 3. According to this process, each pair of successive individual frames 104 are averaged, to form one second level frame 120. Thus the individual frames 104A and 104B are averaged to form the second level frame 120A, and the individual frames 104B and 104C are averaged to form the second level frame 120B, and so on, as is shown in FIG. 4.

However, Lew in view of Gillick fails to teach estimating minimum and maximum bit window times; constructing a bit window from said minimum and maximum bit window (Tackin col 36 lines 15-31)

determining said estimated bit time from a running average of plural measurements of said estimated bit time (Tackin col 26 line 53 - col 27 line 9).

Tackin teaches voice synchronizer should operate with or without sequence numbers, time stamps, and SID packets. The voice synchronizer should also operate with voice packets arriving out of order and lost voice packets. In addition, the voice synchronizer preferably provides a variety of configuration parameters which can be

specified by the host for optimum performance, including minimum and maximum target holding time. With these two parameters, it is possible to use a fully adaptive jitter buffer by setting the minimum target holding time to zero msec and the maximum target holding time to 500 msec (or the limit imposed due to memory constraints). Although the preferred voice synchronizer is fully adaptive and able to adapt to varying network conditions, those skilled in the art will appreciate that the voice synchronizer can also be maintained at a fixed holding time by setting the minimum and maximum holding times to be equal. These estimates are periodically quantized and transmitted in a SID packet by the comfort noise estimator (usually at the end of a talk spurt and periodically during the ensuing silent segment, or when the background noise parameters change appreciably). The comfort noise estimator 81 should update the long running averages, when necessary, decide when to transmit a SID packet, and quantize and pass the quantized parameters to the packetization engine 78.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention extracted pairs of successive sub windows containing words. Identifying and extracting successive frames with words in them would allow for the detection and location of multiple utterances within an audio signal. The repetition of an utterance is not limited to adjacent words and can have a separation between the repeated words, where transitions from a repeated word to the next can be smoothed and the location of occurrence can be stored in memory as to detect a repeating segment of multiple words (i.e. chorus).

It would also have been obvious to one of ordinary skill in the art at the time of the invention extracted pairs of successive windows using a running average and defining a minimum and maximum bit window. Using a maximum and minimum time would allow for a buffer having reduced amount of jitter when extracting and quantizing information from a signal. Additionally, it is well known to use a running/moving average to time based data, where data can be smoothed, reducing the number of fluctuations based on a maximum and minimum period.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael C. Colucci whose telephone number is (571)-270-1847. The examiner can normally be reached on 7:30 am - 5:00 pm, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (571)-272-7332. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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